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SYMPOSIUM ON ORGAN TRANSPLANTATION IN MAN\*

Presented on April 28, 1969, during the One Hundred and Sixth Annual Meeting  
of the National Academy of Sciences

By Invitation of the Committee on Arrangements

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\*Editorial Note: In the program as presented at the Annual Meeting of the Academy in Washington, D. C., April 28-30, 1969, the authors and titles read as follows:

RUPERT E. BILLINGHAM, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania: *Genetical and Immunological Considerations Essential to the Understanding of the Biological Problems Related to Homo- and Hetero-Transplantation.*

FRITZ H. BACH, University of Wisconsin School of Medicine, Madison, Wisconsin: *Biological Methods for the Study of Genetico-, Immuno-, and Histo-Compatibility, and Various Therapeutic Resources Applicable to the Suppression or Control of Immunological Responses.*

JOHN P. MERRILL, Peter Bent Brigham Hospital, Boston, Massachusetts: *Experience with and Lessons from Transplantation of a Paired Organ, the Kidney.*

NORMAN E. SHUMWAY, Stanford University School of Medicine, Palo Alto, California: *Experimental and Clinical Aspects of Transplantation of an "Unpaired" Organ, the Heart.*

VINCENT P. DOLE, Rockefeller University Hospital, New York, New York: *Ethical Aspects and Sociological Implications of Organ Transplantation as a Therapeutic Procedure.*

## CHAIRMAN'S INTRODUCTORY REMARKS

ANDRÉ Cournand

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The Council of the National Academy of Sciences has in the past year demonstrated its interest in health and medical problems in several ways: (1) by creating a section of medical sciences; (2) by entrusting to one of its members the mission of assembling and presiding over a Board of Medicine; (3) by deciding to organize a symposium at the spring meeting of the Academy, on a most important, controversial and publicly discussed subject: the transplantation of organs in man.

My task, in the implementation of the latter decision, has consisted in enlisting the cooperation of a group of bio-medical scientists and of physicians most able to present in relatively simple terms the retrospective, actual, and prospective aspects of a revolutionary mode of therapy to a mixed audience of scientists. I have been fortunate enough to receive an enthusiastic response from four internationally known specialists with varied competence and considerable experience in this field: two of them are immunologists, the third an internist and the fourth a surgeon.

With regard to the presentation of the immunological problems, it was decided to separate, as far as can be, the basic from the applied. To this effect Dr. Billingham prepared a paper dealing with the historical and biological background essential to understand the significance and the consequences of a procedure which violates the vital mechanisms of preserving biological identity and individuality. Dr. Bach agreed to recapitulate and discuss the various methods devised and studied by him and by others, in order to favor the acceptance of a donor's organ by the recipient. At this time, these methods fall into two major categories: testing and typing for *genetico-immuno compatibility* and search for *immuno-suppressive therapies*.

The two clinicians are both the authentic and acknowledged pioneers in the field of organ transplantation and are still leaders in its development in man. They both exemplify the attributes and qualifications of genuine medical scientists: recognized achievements in some specialized branch of biology and/or physiology, expert knowledge of experimental medicine, cautious and sound approach to investigation in the human and extensive clinical experience. They both share also a common concern and compassion for the patients under their care; they believe that the notion of decent survival of these patients is a paramount issue in any new therapeutic venture.

In preparing his paper, Dr. John Merrill could call on what is probably world's widest experience in the transplantation of a *paired* organ, the *kidney*, in animal and in man. He presents the fruits of studies which began nearly twenty years ago.

As to Dr. Shumway, he summarized in his presentation a large experience in the transplantation of an *unpaired* organ, the *heart*. His original contributions are many: design of the surgical technique which has been adopted by all surgeons; analysis of the biological and physiological responses as they were revealed in the

course of several years of animal experiments; and, finally, the cautious application of his animal studies to a limited number of patients, on the basis of justifiable and fairly well defined biological and clinical criteria.

In planning this Symposium, it seemed essential to search for a fifth speaker, a total outsider to the field, i.e., one who had no previous experience with, and no special knowledge of, any of the problems related to organ transplantation, and also no professional relation with medical or surgical experts working in this field. Dr. Dole, satisfying all these requirements, was invited to prepare a paper on the ethical, social, and economic implications of organ transplantation in man. As an additional incentive to this choice, I took into consideration his long experience in biomedical research, his prior and his present interest in the study and treatment of two clinical entities—obesity and drug addiction—with the social and economic aspects of which he was familiar. Indeed, the range of intellectual curiosity of this speaker and the originality of his scientific output were a further guarantee that, besides impartiality, he was qualified to define, *de novo*, some new frontiers of medical progress, in a world increasingly concerned with human experiment and with the inter-relationship between the individual and his social environment.

Confronted with the dual problem of satisfying, on the one side, the desire expressed by the President of the National Academy of Sciences and by the editor of its PROCEEDINGS, to have a printed record of the meeting and, on the other, of taking into account the limitations of space allotted for publication, I made further demands of the participants. Their generous response is recorded in the following pages. In the brief digest of their presentations, they had to exclude almost entirely bibliographical references; they have also alluded to significant statements made in the course of the round-table discussion which concluded the Symposium. The readers of these PROCEEDINGS will unfortunately not be able to recapture the spirit which presided over the exchange of views between the six participants, an exchange which was lively yet well organized, informative as to the past, prospective as to the future, and pleasantly harmonious.

*Editorial Note:* On Dr. Cournand's behalf and our own, we are glad to express appreciation to Dr. Vincent Dole, who was not only a participant in the Symposium but who also valuably assisted the chairman of the Symposium and the editor of the PROCEEDINGS throughout the course of the publication of these papers.